

6-12519



CHECKING SPECIFICATIONS on the Gemini unit to irradiate human blood samples in space are the above Y-12ers who were active in the project. From left are E. N. Rogers, W. T. Smith, Harwell Smith, project leader; Stan Groothuis (standing), W. W. Lee and Sam Kenneman. Not pictured was M. B. Hilton.

Gemini Blood Sample Unit Designed And Fabricated Here By Y-12 Group

Y-12 has fabricated a device to irradiate human blood samples aboard a Gemini spacecraft.

The purpose of the experiment, to be conducted for the National Aeronautics and Space Administration, is to determine the combined effects of radiation and zero gravity on live human blood.

Oak Ridge National Laboratory's Biology Division, in charge of the blood irradiation study, requested Y-12 to design and build the irradiator. ORNL's Isotopes Division was asked to prepare the radioactive sources to be used — beta-active phosphorous-32.

The device is made of aluminum and weighs less than one pound with blood samples and radioactive sources included. Its outer dimensions are three inches by three and one-half inches by one-and-one-half inches.

The unit is required to irradiate five samples of blood from two donors at five different dose levels, ranging from 0 to 200 rad. The samples will be sealed in separate compartments. The crew is protected from any stray radiation.

Actuated In Orbit

An astronaut will actuate the unit after the spacecraft is in orbit and the weightless state has been attained. It will be set into operation by twisting the small operating handle. This action places the blood specimen between pairs of phosphorous-32 sources, enabling radiation exposures at the dose levels required. When the required exposure time has elapsed, the astronaut will retract the handle and terminate the irradiation.

Following the flight, the blood samples will be examined by ORNL biologists. Results of the flight test samples then will be compared with results from the specimens irradiated on the ground.

Design Complicated

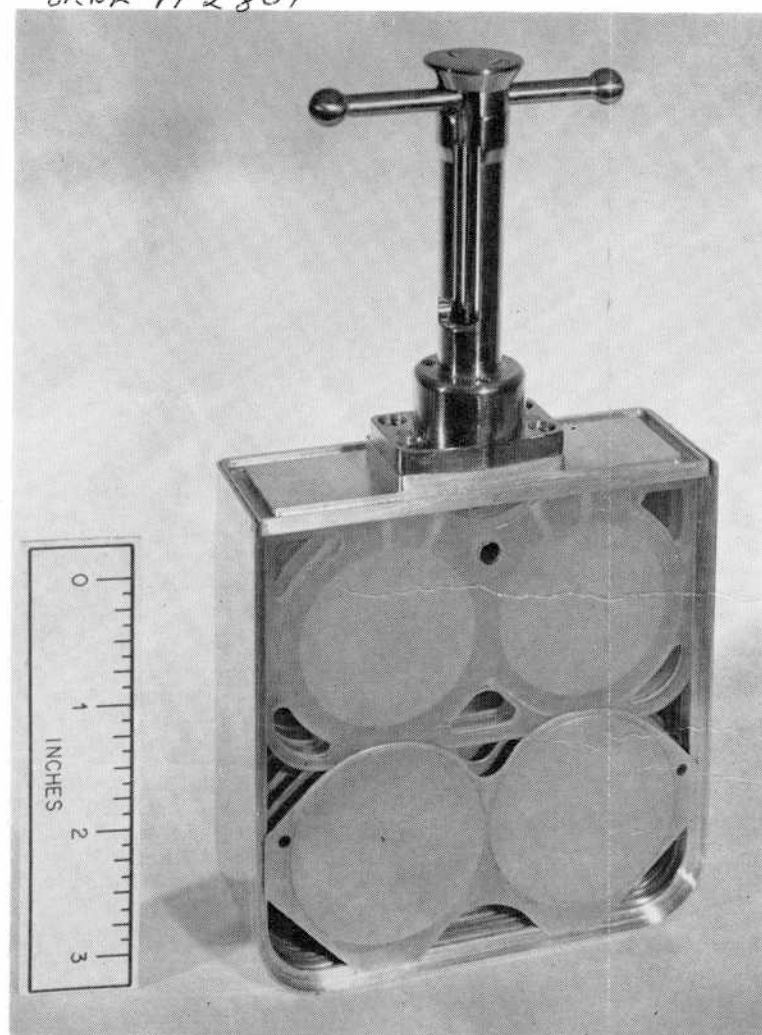
Though the concept sounds

simple, the irradiator has required some ingenious design and development work because of its weight requirements and the perishability of its cargo.

Miniature instrumentation was needed to record the temperature. ORNL 112801

of the blood during the irradiation period. For this, an idea was conceived using two coulometer clocks. One provides a record of time-temperature and the other records time-actuation.

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THE ABOVE UNIT, designed and fabricated in Y-12, will test the combined effects of weightlessness and radiation in human blood cells aboard a Gemini space flight. The unit, prepared for the National Aeronautics and Space Administration, contains radioactive phosphorous-32.

Union Carbide's Capital Outlay Reached New Highs For Year

1965 Expenditures Are Expected To Be At Least As High As \$271 Million Reached During 1964

Union Carbide Corporation spent \$271.2 million on new construction in the United States, Canada, and Puerto Rico in 1964, which was 60 per cent higher than in 1963 and the largest outlay for new plants in Union Carbide's history. In the annual report just mailed to stockholders and employees, Birny Mason Jr., president, said that at least the same amount is expected to be spent this year.

Seventy-one per cent of the total construction expenditures was for new chemicals and plastics facilities, and 19 per cent for facilities for producing industrial gases and cryogenic fluids, such as liquid hydrogen for rocket fuels. The balance was for metals and carbon products.

One of the major new chemicals facilities completed in 1964 was a 300 million-pounds-per-year unit for producing styrene, to be used principally for making plastics and coatings. Also completed during the year were 11 new or expanded on-site air separation installations, which provide steel mill and chemical plant customers with an additional 1500 tons per day of oxygen and nearly 400 tons of nitrogen. Other completed building projects included Union Carbide's third and the nation's largest plant for producing liquid hydrogen, for use principally as rocket fuel; new plastics plants for making blown polyethylene containers and polyethylene film; substantial additions to silicones facilities; additional facilities for producing high-purity metals for use in space vehicles; plants for producing transistors and capacitors for electronics use; and facilities for manufacturing rechargeable batteries to power various types of cordless devices.

Large New Chemicals Complex Planned

Part of this year's capital outlay will be used for a major new chemicals complex in Louisiana, which when completed will be one of the largest chemicals plants in the United States. It will produce raw materials for such products as detergents, anti-freezes, plastics, and synthetic fibers. Another key chemicals building project, which is nearing completion, is a unit for producing detergent intermediates used principally in making low-foam, heavy-duty laundry detergents for automatic washing machines and light-duty liquids for dishwashing. Union Carbide also has scheduled for completion this year at Gary, Indiana, one of the world's largest oxygen plants to provide oxygen for steelmaking furnaces.

In Canada, several significant building projects are under way, including a plant for making nylon and other synthetic fibers; additional facilities for producing chemicals for making urethane foams; and a liquid oxygen and nitrogen plant. During 1964, a plant was constructed for fabricating plastic products—principally rigid packaging containers—and a second rotating-hearth electric furnace was placed in operation for producing high silicon alloys and silicon metal.

Construction expenditures of overseas subsidiary and associated companies rose in 1964 to \$33 million from \$25 million in 1963. The annual report mentions new facilities completed or under way in Argentina, Australia, Belgium, Brazil, India, Sweden, and the United Kingdom.

New Products Serve Many Industries

About 50 new chemical products reached commercial status at Union Carbide during 1964. Among them were chemicals for making foams, pharmaceuticals, and detergents; several plasticizers and resins; transmission fluids; an anti-knock additive for gasoline; and a starch modifier.

A significant development in the plastics field was a new factory-applied vinyl coating system for prefinishing plywood and other exterior wood. It produces durable finishes similar to those used on metal structures.

Continuous processes for producing graphite cloth and yarn were placed in operation during 1964. These make possible a better product for use by the aerospace industry in fabricating tape-wound and filament-wound high-temperature components for rockets and missiles. Special high-intensity arc carbons were also developed for use in continuous solar simulation chambers to test satellites and other space equipment.

An outstanding metal product introduced during the year was Carvan vanadium, a new alloy for strengthening steel. All major steel companies have adopted the alloy because it is more economical to use and is of higher purity than alloys previously employed as vanadium additives to steel.

It was noted that Union Carbide is now marketing to industry special processing equipment designed by its engineers for the corporation's own operations. This equipment includes highly effective distillation units, cryogenic gas upgrading plants, palladium diffusion units, and special units to obtain ultrahigh and very clean

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The Bulletin

Published Weekly For The
Y-12 Employees Of
UNION CARBIDE
CORPORATION



NUCLEAR DIVISION

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Association

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Hargis Daughter Is UT Graduate



Sylvia Darlene Hargis

March 17 is a special day in the J. E. Hargis household. On that day Sylvia will receive a degree at the University of Tennessee in home economics.

Sylvia plans to leave Knoxville and go to Auburn University for graduate work on an Associateship with the school.

The Hargis home is at Route 1, Lenoir City, and the proud father is in Y-12's General Machine Shop.

Another Hargis Will Graduate



Patricia Diane Hargis

Another graduation is observed this Spring in the J. E. Hargis family. Younger daughter Pat will graduate from Lenoir City High School this year, and plans to enter the University of Tennessee in the fall. Pat plans to major in Business Administration.

AGE OF INNOCENCE

At 20 you blush when someone praises you. At 30 you think he's a clever fellow. At 40 you wonder what he wants.

UT Graduate School Gives Spring Courses

Registration Set Next Wednesday

The Graduate School of the University of Tennessee announces its Spring quarter schedule. The Oak Ridge Resident Graduate Program will feature registration next Wednesday, March 24. Classes begin Thursday, March 25, and end May 28.

The Spring Quarter will offer the following courses:

CHEMICAL ENGINEERING 331, Chemical Engineering Analog Computation.

CHEMISTRY 545, Statistical Thermodynamics; 573, Theoretical Inorganic Chemistry; and 675, Molten Salt Chemistry.

MATHEMATICS 453, Introduction to Analysis; and 455, Advanced Calculus.

MECHANICS 525, Thermal Stresses.

METALLURGICAL ENGINEERING 593, Metallurgical Thermodynamics.

PHYSICS 323, Heat and Thermodynamics; 373, Introduction to Atomic and Nuclear Physics; 451-2-3, Atomic Physics Laboratory; 463, Gaseous and Solid State; 523, Advanced Modern Physics; 533, Advanced Dynamics; 563, Mathematical Methods in Physics; 643, Advanced Topics in Quantum Theory; 663, Interaction of Electrons with Solids; and 673, Advanced Solid State Physics.

STATISTICS 515, Theory of Least Squares.

ZOOLOGY 113, General Zoology.

Registration hours next Wednesday will be from 6 until 8 p.m. at the Oak Ridge Institute of Nuclear Studies Training Building. Faculty advisors will be present to advise and approve the course selections.

All registrations for the Spring Quarter must be completed by April 1, including the payment of fees.

The courses in the Graduate School are all approved for reimbursement under the Carbide Education Assistance Program.

Further information may be obtained by telephoning the school on extension, 3-4129.



Ride wanted from Miramar Circle, Oak Ridge, to East Portal, straight day. Dottie Fielder, plant phone 3-5981, home phone Oak Ridge 482-1419.

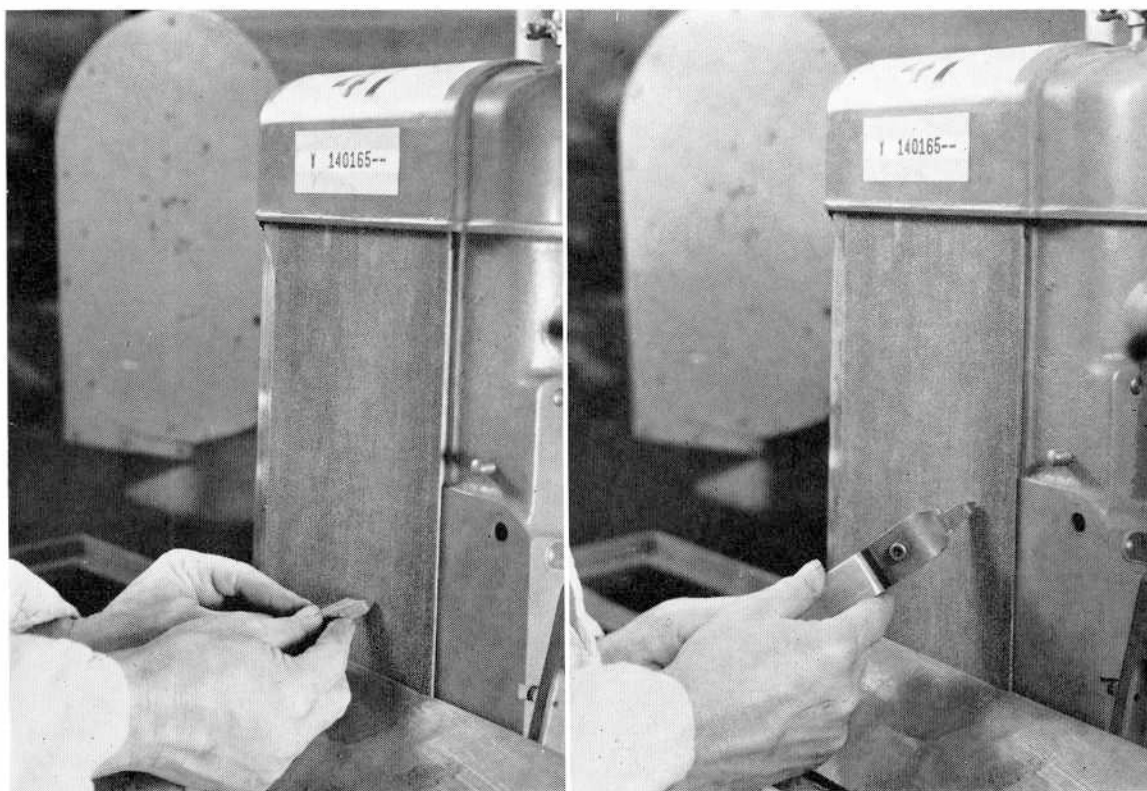
Rider wanted from South Knoxville to any portal, straight day. Ed Cook, plant phone 3-5445, home phone Knoxville 577-4786.

Society For Metals Meeting Is Tonight

The Oak Ridge Chapter of the American Society for Metals meets tonight, Wednesday, March 17, at the Alberti Italian Inn, Knoxville. The technical session is at 6:45 p.m., and dinner will be held at 8.

Speaker for this month's meeting is J. K. Sprinkle, General Electric, who will speak on "Recent Advances in Steel Foundry Technology."

All ASM members and guests are invited.



BEFORE AND AFTER shots of small bit grinding are seen above. At right, the old method is utilized where the fingers come close to the grinding surface. At right is the same bit, inserted in E. A. Cruey's device for grinding the small part. The device is magnetized and the bit is held in place by a set screw.

Simple Device Makes Tool Grinding Safer

For years Y-12ers have known that safety is no accident (and that's not a play on words either). In other words, safety consciousness does not accidentally fall upon us. It is created with a will, and often provides a way out of a tricky situation.

Take tool grinding, for instance. Employees of necessity must come in contact with grinding and sanding instruments, often moving at high velocities. But it doesn't have to be hazardous... if man's capacity to think is applied. And that's exactly what E. A. Cruey has done.

Cruey, a machinist in Tool Grinding has developed an ingenious little device that holds a small tool against the grinder... thus removing his fingers from the critical area so near the wheel or sander... and flying sparks and pieces of metal.

It all came about in a January safety meeting for G Shift in the shop. A request was made for each employee to examine his work assignments and come up with any recommendation that might reduce potential hand or finger injuries. Cruey hit upon his development which eliminates an employee positioning his hands or fingers near a grinding wheel or sanding equipment.

Safety consciousness and good safety attitudes are not new with employees in the Tool and Template Grinding areas. There has not been a single disabling injury in these shop areas since they were established in 1951.

Employees and supervision alike are to be commended for their fine safety attitude which has contributed to this excellent record. Congratulations to Cruey and other members of Tool Grinding. R. S. Rucker is department superintendent; L. A. Taylor, general foreman; H. Gresham, J. S. Brock, J. E. Bledso and R. T. Lovell are foremen.

Examples of safety - awareness such as that exhibited in Tool Grinding are fine standards for the rest of the plant to follow. Congratulations again, men!



E. A. CRUEY, TOOL GRINDING, is seen above using the device he designed to keep fingers away from grinding and sanding surfaces. Safety consciousness and good safety attitudes are not new with employees in the Tool and Template Grinding areas.

Northwestern's Block Leads Physics Seminar

M. M. Block, Northwestern University, will conduct this week's Physics Division Seminar. He will use the subject "Recent Neutrino Experiments at CERN."

The seminar is set for Friday, March 19, at 3:15 p.m., in the East Auditorium of Building 4500, Oak Ridge National Laboratory.

J. E. Francis Leads Thermonuclear Seminar

J. E. Francis Jr. will discuss the "Hydrogen Arc Experiment" at this week's Thermonuclear Division seminar.

It is set for tomorrow, Thurs-

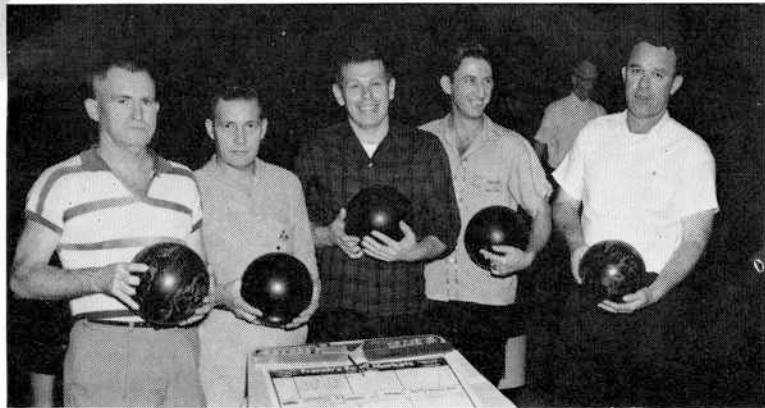
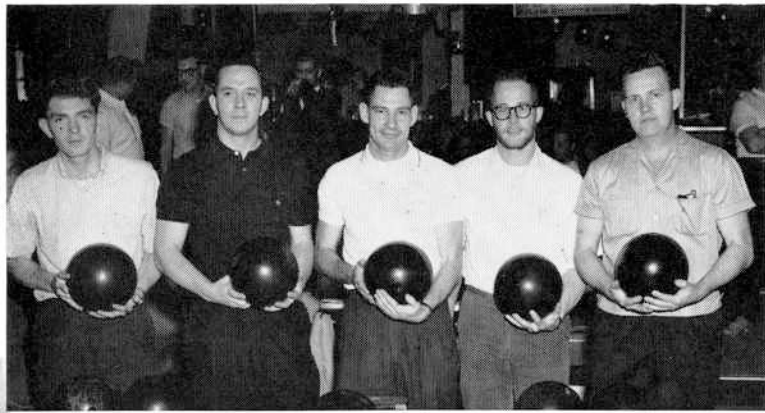
day, March 18, at 9 a.m. in the TD Conference Room, Building 9201-2.

Boosters Club Plans Banquet For Wildcats

The Oak Ridge High Booster Club will honor this year's sterling basketball team with a banquet Friday night. It is set for 6:30 p.m., Friday, March 19, at Robertsville Junior High School Cafeteria.

Tennessee Polytechnic Institute's famed coach Putty Overall will be the banquet speaker.

Several Y-12ers have tickets which are going for \$2.50 each. Come on out and honor this year's Wildcats.



SHARING THE CELLAR of the C Bowling League are the two teams above . . . the Badgers and Shud-A-Beens. In the top photo are the Badgers, from left, John Austin, Paul Evans, Dick Huber, Tom Watts and A. E. Smith. At bottom are the Shud-A-Beens, W. R. McGill "Shorty" Bryant, H. A. Lay, M. L. Cooper and George Caylor.

Big Five Break Deadlock On C Alleys But Lead Is Held To Only One Point

The Big Five broke the tie in the C Bowling League last week by swamping the Parbusters for four points. The Rounders also took four from the Sunflowers, and moved to within two points of the lead. The Hi Lifers took three from the Hookers, as did the Shud-A-Beens over the Five Roses and the Badgers over the Strikers. Two and one-half points went to the Rodders over the Lucky Strikes.

Dick Brothers, Par Busters, rolled a 222 scratch, 259 handicap game. J. E. Morgan, Rounders, rolled a 577 scratch series; and W. O. Brucker, Hookers, took a 688 handicap series.

The Big Five zeroed in on singles, taking 930 and 1062. The Rounders rolled a 2566 scratch series, and the Big Five returned to the board to take handicap series highs of 2943.

League standings follow:

Team	W	L
Big Five	28	12
Hi Lifers	27	13
Rounders	26	14
Strikers	21	19
Rodders	19½	20½
Par Busters	19	21
Hookers	19	21
Lucky Strikes	17½	22½
Five Roses	17	23
Sunflowers	17	23
Shud-A-Beens	17	28
Badgers	12	28

Status Quo Is E League Story

Top-seeded teams in the E Bowling League shared two points each last week . . . as the Hot Shots and Alley Bees called it a draw. The Pintwisters took three from the Cannon Balls, and the Four Squares took the bye-of-the-week.

D. Lawrence, Hot Shots, was hot on singles, rolling a 204 scratch, 237 handicap game. His 529 series scratch score was shared with R. Gibson, Alley Bees. Lawrence's 628 series count handicap-wise was high, however.

The Alley Bees rolled high singles, 682 scratch, 818 handicap. Their 1884 scratch series was high also. The Hot Shots blocked the sweep by taking series, posting a high 2297.

League standings follow:

Team	W	L
Hot Shots	31	17
Alley Bees	30	22
Pintwisters	25	23
Four Squares	23	25
Cannon Balls	23	29

Rollmasters Keep Bush Alley Lead

The Rollmasters kept their one-half point hold on first place in Bush bowling last week. They took three from the Hi Balls and the nearest contenders, the Beavers also took three from the Seven Sixties. Moving up the Outcasts took four from the Spec Five, and so did the Beginners bowling past the Teds.

Lou Kovach, Hi Balls, took a 204 scratch, 235 handicap single game. Frank Winstead, Rollmasters, rolled a 531 scratch series and Jerry Davis, Beginners, tallied a 624 handicap series.

The Rollmasters swept singles, taking 794 scratch, 953 handicap. Their 2273 was also high in scratch series counting. The Beginners took handicap series highs of 2821.

League standings follow:

Team	W	L
Rollmasters	28	12
Beavers	27½	12½
Outcasts	25	15
Beginners	20	20
Spec Five	19	21
Hi Balls	15½	24½
Teds	13	27
Seven Sixties	12	28

Ferguson Paces Pistol League In Firings

With only two more matches left in the current Pistol League season, C. R. Ferguson is still in first place with a good solid 289.-584 handicap score. L. M. Bray, 286.920, and T. C. Swindell, 286.-920, are having a little battle of their own for second place standings.

D. R. Alford continued on his own, way out in front with a scratch score of 277 which brings his average score up to a big 277. He is being followed, but way back, by G. L. Davis with an average score of 249 and W. A. Less with 245.

Basketball League Action Winds Up

Fearless Five Take League 2nd Place

The Basketball League finished its action last week . . . with Metals and Ceramics taking both league halves. The Fearless Five and Analytical Chemistry had a play-off for second place.

Analytical Chemistry defeated the Raiders 40 to 27 . . . as Butch Armisted hit with consistency, and manned the boards as well. He scored 14 for the winners. Joe Mason led the losing Raiders with 10.

The All Stars defeated ORINS 68 to 55 . . . with Jim George taking 24 of the winning 68 points. Bill Martin tallied 18 and Dick Wagner took 12. Jerry Batson led the ORINS team with 17.

Y-12's Eagles fell victims to the Analytical Chemistry champ team 53 to 24. Fred Heaker took 13 for the winners . . . and Jim Froula rounded out an even 10 for the losing Eagles.

The Fearless Five cinched second place by taking Biology 74 to 28 in a lop-sided game. Cloy Goetsch led the victors with 22 points.

Play-off action pitted the Fearless Five against Analytical Chemistry . . . the FF crowd winning 56 to 39. Thus they take the undisputed second-place crown in the 1964-65 basketball action. The Five jumped to an early lead and held onto it throughout the game. Jim Wike was hot for AC while Larry Finch, Cloy Goetsch were leading the FF pack.

Team	W	L
Metals & Ceramics	8	0
Fearless Five	6	2
Analytical Chemistry	6	2
Biology	5	3
Fuds	4	3
All Stars, K-25	3	5
ORINS	1	6
Raiders, Y-12	1	7
Eagles, Y-12	1	7

Set Ups, Beavers Volleyball Leaders

The Set Ups and Beavers continue their spotless slate in the Volleyball League.

Action began last week as the Bums took three games from the K-25 Instrument team, 15-6, 15-12, and 15-10. The Instruments came back to win number four 15-9. ORSORT took three from the Mix-Ups, 15-8, 15-11, 15-12 and the MixUps won one 15-12.

The Set Ups won four from the Yanks by forfeit.

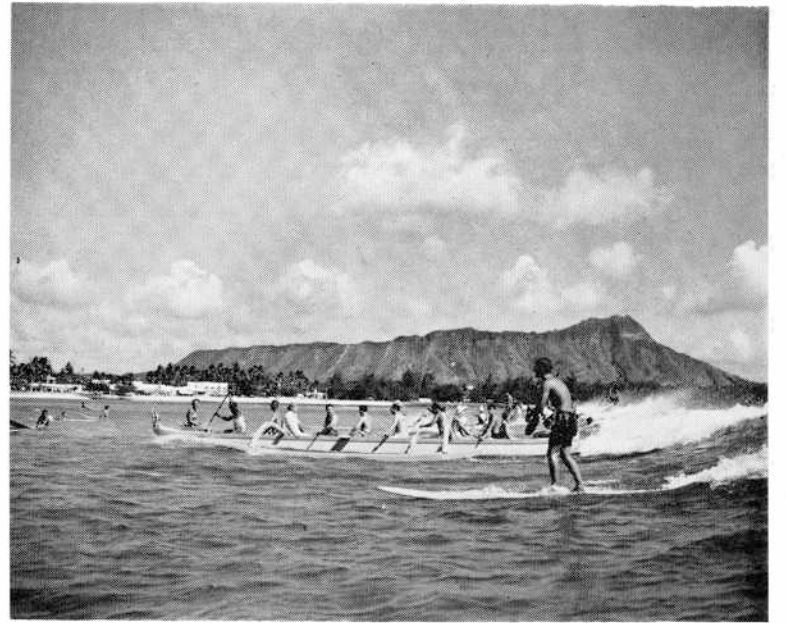
The Scrubs and Old Men took two games each . . . the Scrubs winning 15-12, 15-12 and the Men winning 15-9, 15-7. Y-12's sterling Beavers took the last action of the night, besting the Vaults 15-4, 15-2, 15-11 and 15-4.

Team	W	L
Beavers, Y-12	16	0
Set Ups	16	0
Old Men	9	7
Scrubs	10	10
Eagles, Y-12	6	6
Vaults	3	8
K-25 Instruments	7	9
Bums	8	12
ORSORT	4	8
Mix Ups	5	11
Yanks, Y-12	1	11

Details On Turkey And Wild Hog Shooting

Wild hogs may be hunted in Tennessee the year round in only two counties. You may kill without limit in Franklin (Winchester) and Humphreys (Waverly).

Statewide turkey hunting season is split this year, the first half running April 3 through 10 and the second May 1 through 15. Turkey hunts in managed areas begin April 2 in Central Peninsula, April 9 in Fall Creek Falls, April 16 in Tellico, and April 23 in Prentice Cooper.



SURFING AND OUT-RIGGING on the beautiful beaches of Hawaii, under the watchful eye of old Diamond Head are the above islanders and vacationers. Carbiders may wish to take advantage of the package vacation described below to Hawaii during the month of September.

Beautiful Pacific Tour Being Planned For Employees; Cost Held At Minimum

An exciting tour of the West Coast and the Hawaiian Islands is the September vacation being arranged for Union Carbide employees. Beginning September 11, the tour includes stop-offs in San Francisco for a tour of the city, the Golden Gate area, the Giant Redwood forests, and then on to Honolulu on September 14.

Goofers' Stansell Rolls Hot Again

The Goofers inched toward a sure cinch of taking the Mixed League's last half last week by ditching the Blue Angels for four points. Also taking four the Alley Oops out alleys the Turtles. The Chumps took three from the Alley Cats, and the Twisters took three from the Bingos.

Ella Stansell, Goofers, for the second week in a row, lighted the alleys with fire. Her 184 scratch, 233 handicap game was high . . . and her 528 scratch, 672 handicap series was season highs.

W. C. Smith, Alley Cats, took a 206 scratch, 235 game. Bob Haggood, Goofers, rolled a 536 scratch series; and Werner Schenk, Twisters, totaled a 645 handicap series.

The Twisters took singles of 639 and 830. The Goofers rolled scratch series of 1892 and the Twisters turned back to the boards for a 2352 handicap series.

League standings follow:

Team	W	L
Goofers	36	8
Alley Oops	26	18
Alley Cats	24	20
Blue Angels	22	22
Chumps	22	22
Twisters	20	24
Turtles	17	27
Bingos	13	31

Free Boating Course Offered In Oak Ridge

A free course in boat-handling and water safety has started in Oak Ridge. The United States Coast Guard Auxiliary Flotilla 12-7 started the courses, yesterday, Tuesday, March 16. They will be held on successive Tuesdays at 7:30 p.m. in the Fellowship Hall of the Chapel-on-the-Hill.

Topics to be covered include maneuvering, marlinspike seamanship, aids to navigation, charts and compasses, legal requirements, motor trouble-shooting, required and recommended equipment, and other boating hints.

The public is invited to these courses, and certificates in Basic Small Boat Handling will be awarded those successfully completing the course.

A full week of surf-riding, island hopping, or just relaxing in the sun . . . even a complete luau feast is in store for the vacationers in the 'jewel of the Pacific.'

On September 20 the tourists will leave the beautiful islands for home . . . with lay-overs in Los Angeles and Hollywood. A tour of Disneyland and Knott's Berry Farm is planned . . . with another jaunt to Las Vegas.

Then there's a sightseeing tour of Hoover Dam and Lake Mead, before boarding the plane for Chicago and home.

Arrival is planned in Knoxville for the evening of September 25.

This sets a vacation for exactly two weeks off from work.

The 15-day tour is arranged at \$630 per person, which includes three nights in San Francisco, Los Angeles, two nights in Las Vegas and six nights in Honolulu. Meals on this trip are not included in the overall price, but hotel lodgings are. A beachfront lodging is promised in Hawaii.

A meeting will be held tomorrow, Thursday, at 7:30 p.m. at the Holiday Inn, Oak Ridge, for employees interested in taking the Scandinavian summer tour. An agent from World Travel Service, who is handling the tours, will show movies and be available for questions concerning the tours.

Both dream vacations are open to all Carbide employees, and members of their families.

More information, and application blanks are available at the Recreation Office, telephone extension 3-7109.

Slo Pitch Managers Paged For Lineup

A sure sign of Spring is the cry of "play ball." For an early start toward a successful season softball will soon get underway. Managers are urged to submit their team names to the Recreation Office as soon as possible.

Just telephone 3-7109. It is important to have all teams entered within the next three or four weeks in order that practice schedules may be set up, equipment needs determined, etc.

The closing date for entries will be announced later.

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Union Carbide's Capital Outlay For 1964 Is Tops

Continued from Page 1

vacuums such as are required in space simulation chambers. An example of the latter is a cryogenic pump that contains no moving parts and removes gases by condensation, adsorption, or both.

New Flashlight Debuts

A rechargeable flashlight powered by new nickel-cadmium batteries was added to Union Carbide's fast-growing line of Eveready products, which includes more than 450 different types of batteries. The new flashlight provides twice the light of other rechargeables. The Prestone line of car care products was augmented by an oil conditioner to stop excessive oil burning and a car window cleaner for use in automatic car washing establishments.

In the fibers and fabrics field, one of the most significant product developments that Union Carbide announced during the year was the introduction of expanded vinyl fabrics, under the trade mark Vileau, for use in furniture upholstery.

Research And Development

Last year, Union Carbide spent about \$80 million on research and development programs. In addition, the corporation's laboratories conducted approximately \$7 million of government research contract work.

At its research laboratory locations in the United States and Europe, Union Carbide has more than 2,000 scientists and engineers engaged in research and development programs. These men and women are working in practically every field of science — including biology, chemistry,

engineering, geology, mathematics, metallurgy, and physics.

One of the objectives of the research and development programs is to provide the broad technical foundation necessary to assure the corporation's continued growth and expansion into new fields. It is of interest to note that in 1964 two new business areas resulting from application of the corporation's technological skills and know-how were activated. They are ocean engineering — including deep-sea diving services — and the first commercial sales of large fuel cell power systems.

Divisions Share Growth

All of Union Carbide's major operating groups — chemicals, plastics, industrial gases, metals, and carbon products — shared in the year's gain in sales, which as previously reported rose to a record \$1,878,918,000 in 1964. This represented an increase of 13 per cent over 1963 sales of \$1,668,188,000. Net income, also at a new high, rose 18 per cent to \$189,069,000, or \$6.28 a share. In 1963, the net income was \$160,172,000, or \$5.32 a share.

Chemicals accounted for 36 per cent of the total sales, or \$679 million. Plastic products contributed \$342 million, or 18 per cent; and the industrial gases group also accounted for 18 per cent with \$341 million in sales. Metal products accounted for \$278 million, or 15 per cent; and carbon products for \$239 million, or 13 per cent of the total.

In his letter to stockholders, President Birny Mason Jr. said that the directors' recent decision to raise the quarterly dividend from 90 cents to \$1.00 a share and to recommend that Union Carbide's stock be split on a two-for-one basis reflects their confidence that the corporation has achieved a new level of earnings that can form a broader base for further growth.

Huff Leads Y-12 Rifle Team In Shoot

The Ragle League started with a bang recently with Y-12er Jack Huff leading the pack with a 292 scratch score from a possible 300. Following Huff was G. W. Holcombe, 282; C. G. Brewster, 282; Art Hensley, 281; and Dave DeWalt, 280. Perfect scores were fired in the prone positions by all five.

Huff's kneeling shots and off hand shooting put him ahead of the pack.

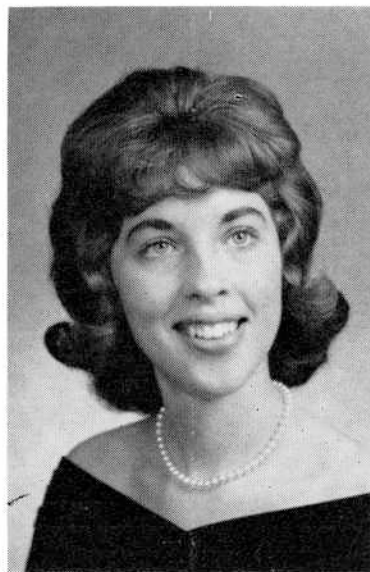
Y-12's team scored two points in team competition, as X-10's tallied three.

League standings follow:

	Score	Points
X-10	1431	3
Y-12	1417	2
Independents	844	1

Report security discrepancies promptly.

Sandra Braden Will Graduate With Honors



Sandra Braden

Another proud Y-12 parent comes through with a school leader. Mr. and Mrs. Mack R. Braden, Maynardville, are extremely proud of their daughter Sandra. (Braden is in Y-12's Guard Department.)

Sandra has been named Salutatorian at Horace Maynard High School, with an average of 4.82 out of a possible 5.0 points.

During her school stay Sandra has been editor of the school paper, copy-editor of the yearbook, member of the 4-H, F.H.A. and Beta clubs, parliamentarian of the F.H.A., past F.H.A. Secretary and Beta Club Song Leader. She was a member of the junior play cast.

A member of Alder Springs Baptist Church, Sandra plans to enter the University of Tennessee in June.

Rippers, Bumpers, Tigers Tie Classic

A three-way tie has developed in the Classic Bowling League. The Tigers and Bumpers have moved up to share the spotlight with the Rippers. The Tigers took four from the Rippers, the Bumpers captured three from the Swingsters. Other four-point wins went to the Wasps over the Playboys and the Smelters over the Splinters. Two and one-half points went to the Has Beens over the All Stars, and the Cubs and Wolves shared two.

E. B. Galloway, Bumpers, rolled high singles, taking a 218 scratch, 253 handicap game. Jack Spears, Rebels, rolled a 587 scratch series, and Galloway returned to the boards with a 683 handicap series.

The Swingsters took singles with 972 and 1058 and the Bumpers rolled series highs with 2633 scratch, 3014 handicap.

League standings follow:

Team	W	L
Rippers	28	12
Bumpers	28	12
Tigers	28	12
All Stars	24½	15½
Has Beens	24½	15½
Eightballs	21½	18½
Playboys	21	19
Rebels	21	19
Cubs	18	22
Swingsters	17	23
Wolves	17	23
Markers	16	24
Splinters	15	25
Wasps	14½	25½
Screwballs	13	27
Smelters	12	28

CALORIE COUNTING?

There's a quick way to compute the number of calories you need. For a moderately active adult male multiply your ideal weight by 21... for a woman by 18. This will give you the approximate number of calories needed daily.

Gemini Blood Sample Unit

Continued from Page 1

This system uses small glass tubes — each one and one-eighth inches in length — filled with mercury. In the mercury is a bubble. When voltage is applied to the mercury column, the bubble moves slowly along the tube at a standard, known speed (requiring about 30 hours to traverse the column.)

Minute Marker Bulbs

On one side of the column are many small thermostats. Connected to the thermostats, like a string of multi-colored Christmas tree lights, are extremely tiny bulbs — so small that one can hardly see them with the naked eye. The colored bulbs light according to the temperature sensed by the thermostats.

The light from a bulb or bulbs will pass through the slow-moving bubble "window" in the mercury column to be recorded on a strip of color film behind each column. Thus, it will be possible to read the film after the flight and determine the temperature and actuation time of the unit during the irradiation period.

Because live blood may be poisoned by metal containers, it was necessary to use an epoxy plastic. Y-12 has broad experience in the fabrication of both metals and plastics.

Sealed At Launch Site

Since the blood must be drawn from the volunteers shortly before the craft is launched, the unit cannot be sealed until the blood is in its proper position. This necessitates an eleven-hour welding job to be performed at the Cape Kennedy site.

The device has been subjected to a series of tests, including decompression, leak check on container welds and vacuum seals, acceleration, vibration, impact and temperature-pressure. It has performed satisfactorily.

Overall project director for the blood irradiation experiment is M. A. Bender, ORNL Biology Division. He is assisted by Carolyn Gooch.

Smith Is Leader

Y-12 project leader for the irradiator is H. F. Smith Jr., Development. Other Y-12ers playing important roles in the design and development of the unit include S. E. Groothuis and W. T. Smith, Plant Engineering, W. W. Lee, also of Development, E. N. Rogers, Technical Services, and M. B. Hilton, Product Engineering.

Project director for development of the radioactive sources is F. N. Case, ORNL Isotopes Division.

Professional Engineers Charter Is Sought

A request has been filed for a charter for an Oak Ridge Chapter of the Tennessee Society of Professional Engineers. A total of 20 members and 30 nonmembers has applied to the Board of Directors for such recognition.

Engineers have been contacted in around Oak Ridge, including Kingston, Harriman, Oliver Springs, Crossville, Clinton, LaFollette and Norris.

Any engineer wishing to become a charter member of the Chapter may secure information from Fred Stout, telephone extension 3-7269, or Bill Halchin, telephone 3-7940.

LOOK MA, CAVITIES!

After six months of using a new bourbon-flavored toothpaste, a group reports that they had 40 per cent more cavities, and couldn't care less!

Recreation



calendar

Saturday, March 20

SPRING FISHING RODEO, E, F, G, H & J Shifts — Blue Springs Dock. All Y-12ers welcome.

Sunday, March 21

SKEET LEAGUE, 1 p.m., Oak Ridge Sportsmen's Association firing range.

Monday, March 22

BOWLING: C League, 5:45 p.m., Bush League, 8 p.m., Ark Lanes.

PING PONG: 7:30 p.m., Wildcats Den.

Tuesday, March 23

PHYSICAL FITNESS: 7:30 p.m., Oak Ridge High School.

Wednesday, March 24

BOWLING: E League, 10 a.m., Mixed League, 8 p.m., Ark Lanes.

PISTOL LEAGUE: 7:30 p.m., Anderson County Gun Club, Clinton.

Thursday, March 25

BOWLING: Classic League, 5:45 p.m., Ark Lanes.

VOLLEYBALL: League Play, 7 p.m., Oak Ridge High School.

RIFLE LEAGUE: 7:30 p.m., Anderson County Gun Club, Clinton.

Saturday and Sunday

March 27, 28

ALL CARBIDE BOWLING TOURNAMENT — Ark Lanes.



Congratulations to the following early Spring celebrants observing important milestones with Union Carbide Corporation.

20 YEARS

Raymond E. Wilkerson, Buildings, Grounds and Maintenance Shops, March 17.

Lloyd T. Murphy Jr., Dimensional Inspection, March 20.

Kenneth E. Caughron, Utilities Administration, March 21.

15 YEARS

William C. Slagle, General Expediting and Auxiliary Services, March 19.

Earl E. Goode Jr., Cashier and Travel, March 20.

William J. Hayes, H-2 and F Area Shops, March 22.

10 YEARS

Erb H. Mowery, Chemical Engineering Development, March 18.

St. Pat Dance Is Set By Dancetimers

The Dancetimers say, "Put on your old 'green' bonnet and come on out!" They will stage their salute to St. Patrick dance tomorrow, Thursday, March 18.

The fun starts at 9 p.m. at the Ridge Recreation Hall... and all single adults are invited... Irish or no.

SAFETY SCOREBOARD

The Y-12 Plant Has
Operated
103 Days Or
3,066,000 Man-Hours
(Unofficial Estimate)
Without A Disabling
Injury
Through March 14
Phone 7755
For Daily Report
On Accident-Free Hours



The E, F, G, H and J Shifts are planning a big Spring Fishing Rodeo this coming Saturday, March 20. It will be held at Blue Springs Boat Dock on Watts Bar Lake. Hours are from 6 a.m. until 5 p.m.

There are awards in the species of smallmouth bass, largemouth bass, crappie, pike, bream, stripe and rough fish (drum or cat). Also there's a big dock prize to be awarded.

Crappies should be hitting pretty good with a break in the weather. No boats will be held for the group, and each person is requested to call the dock direct and reserve his own boat. There is free launching.

There will be plenty of good food and supplies at the boat dock. The Shifters are welcoming any Y-12er and his family to come on out and join in the fun. That's Saturday, March 20.